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The perceived user value of AR in online shopping experience

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Abstract of Bachelor's thesis

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Abstract

Augmented reality (AR) is a technology that allows user to enrich physical environment with virtual objects. The spread of mobile devices and advances in technology have finally brought this two-decade old invention to life. It offers businesses an intriguing opportunity to create immersive and interactive experiences to their customers and develop new business models. Even though some firms have already tried to extend their business with this new technology, still there is only little knowledge of its actual value for the customer. AR applications are emerging in different fields such as medical, entertainment, design, education, commerce and advertising. This study will concentrate on AR applications in online marketing.

This thesis aims to fill the existing research gap in the area of consumers' perceived value of AR through a qualitative case study of IKEAs AR application. Due to paucity of benchmarks, related research and measurable elements the long-term effects of AR as a marketing tool are still very little understood. Focus group was the method chosen for the study as AR in marketing context is still a new phenomenon. Thus, the method was an appropriate place to begin.

The previous research on the field highlights the importance of hedonic aspect in the customer value. This research brings out that creating utilitarian value in the AR online marketing experience is crucial to build sustainable use in consumer behavior. This is highlighted especially in the future as the novelty effect eventually fades away and these applications become more general. The first-generation AR applications do not seem to meet the expectations of users. Implications are provided to companies and developers of these applications.

Keywords Augmented Reality, AR, online shopping, perceived value

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1 Introduction

The competitive atmosphere on the market has driven companies to more customer-centric practices. Companies must focus on their customers' perceived value in order to compete effectively. Technology has an important role in providing value to customers. Thus, companies continually face decisions whether to implement new technology or not. Industrial revolution 4.0 has come with multiple new technologies. Evolving technology is giving marketers and business leaders tempting possibilities to engage with their customers in previously unimagined ways (Yaoyuneyong, Foster, Johnson, & Johnson, 2016). Increasingly, companies try to find innovative ways to use this new technology (Hilken, de Ruyter, Chylinski, Mahr, & Keeling, 2017). Successful business integration of such technology can have a huge effect on the business efficiency and enhance customer experience (Roblek, Meško, & Krapež, 2016). New technology often lacks evidence-driven research about its usefulness and efficiency. Thus, there is increasingly vast amount of new technology available for companies to choose from with little to no research. Therefore, companies lack evidence-driven theory to base their strategic decisions leading to strategies that are based on instinct-driven conjectures (Yaoyuneyong et al., 2016).

Augmented reality (AR) is one of the innovations of Industrial revolution 4.0 has emerged (Camarinha-Matos, Fornasiero, & Afsarmanesh, 2017). It is still at its early stages and not many companies know how to benefit it in their business (van Kleef, Noltes, & van der Spoel, 2010). However, the future is AR and new ways to use it are rapidly emerging which tells about its potential in multiple different fields such as medical, entertainment, design, education, commerce and advertising (Alkhamisi & Monowar, 2013). It is natural that those who are better equipped to face the new demands on the market will replace any business lagging behind (Dadwal & Hassan, 2015). Therefore, companies should put effort in getting to know AR more and explore innovative ways to exploit it in their business to keep up with the rapid development of technology (Dadwal & Hassan, 2015).

Even though it has been agreed in previous research that AR can provide value in multiple forms (Dacko, 2017) it is still little understood how users experience it. Entertainment systems are one of the most successful proof of its excellence (Haller, Billinghurst, & Thomas, 2006). Now the question is whether AR can also be successfully used in other fields creating functional value. Moreover, it has been noted in previous

studies that significantly the perceived customer value is resulted from novelty effects (Grubert, Langlotz, & Grasset, 2011; Olsson, Lagerstam, Kärkkäinen, & Väänänen-Vainio-Mattila, 2013). It is still unclear if AR systems are a sustainable tool to create long-term value (Eyüboğlu, 2011).

This thesis aims to discover how AR can be used in online shopping in which AR has shown great potential (Billinghurst, Clark, & Lee, 2014). More specifically, to study how customers experience it as part of their shopping experience. The present study examines if customers find value of these AR provided services that have the potential to be more than entertainment. It will be discussed weather customers find these applications useful in their decision-making process. Moreover, how entertaining the experience is.

AR is in its initial phase in the consumer market. It is seen as an exciting and unexplored technology. Development of mobile technology has enabled AR to reach a general use (Schmalstieg, Langlotz, & Billinghurst, 2011). It is believed that AR applications will change the purchasing behavior in significant ways (Dacko, 2017). Companies that have been able to integrate AR as part of their marketing strategy have gained an important position in the market. An online retailer just showing they have AR technology might attract new customers and be perceived as different from competitors (Bonnin, 2020; J. Kim & Forsythe, 2008). At this stage a forerunner company can benefit from AR in terms of greater market share, positive word-of-mouth (WOM), publicity and engaged customers (Bulearca & Tamarjan, 2010). Current AR applications have mostly received positive evaluations from users based on the reviews on App Store (App Store 11/2019). However, the positive experiences are commonly overshadowed by remarks of applications' practical uselessness and unreliability of the technology (Olsson & Salo, 2011).

In the research field AR is still a new phenomenon. Nevertheless, new findings have been rapidly emerging in the very recent years, which makes it compelling and relevant topic to study. The previous research on AR has mostly taken a business view on AR and centered on the acceptance of this new technology with a quantitative approach (Billinghurst et al., 2014). This study aims to be very experimental and customer-orientated taking a qualitative approach. We aim to improve the current understanding of the customer value that AR systems yield. This will be discovered through an experimental study of consumers' hands-on experience with AR application. The primary data were collected from focus group interview. To conceptualize the abstract nature of AR this study focused on a particular case. IKEA is a forerunner company on the AR marketing field with its IKEA Place AR application and therefore chosen to be

appropriate case to apply in this study. The results are believed to offer interesting and valuable insights that a quantitative approach would not be able to reveal. This paper aims to provide valuable and important aspects for both companies and future researches.

1.1 Research objectives and research questions

The research orientations tend to go back and forth. For decades consumers are seen as rational problem-solvers accomplishing tasks as their motivation (Holbrook & Hirschman, 1982). This kind of motivation is considered as utilitarian motivation (Holbrook & Hirschman, 1982). However, in the recent years growth of hedonic-motivation systems have outperformed the utilitarian-motivation systems in sales bringing up the hedonic motivation into research consideration (Lowry, Gaskin, Twyman, Hammer, & Roberts, 2013). Hedonic-motivation systems are primarily used to pleasure rather than their productivity (Lowry et al., 2013).

AR systems can be viewed as drivers for hedonic motivation due to their richness in imaginary. The current literature on AR has focused on the potential of hedonic value in AR systems. The importance of creating hedonic value is highlighted. Developers are encouraged to underline the hedonic motivation when designing new AR applications.

The range of AR applications has been growing and they are emerging on different fields of usage. The growth is expected to continue making AR general technology familiar to consumers and finally to general use (van Kleef et al., 2010). Thus, the underlying belief of this study suggests that creating hedonic value only will not be sufficient to build sustainable usage of AR application in marketing context because customers need the functional benefits (utilitarian value) as well. As the hype of AR will eventually fade away companies will have to keep developing applications in the direction where they are still able to create value for the customer. Therefore, the objective of this study is to discover the current status of customer valuation of the AR marketing applications and further discover if and how these applications should be developed in the future in order to keep attracting customers. Therefore, the research questions of this study are as follows:

Q1. How do customers perceive the value of AR applications businesses are offering?

Q2. How could businesses prepare for the future of AR?

To be able to answer these questions this thesis will first take a quick look on the previous literature to provide sufficient background information for the topic. We will open the concept of AR and how it can be applied in different fields focusing on its online marketing possibilities. Through a case study of IKEA and focus group interview with application usage we seek answers to the research questions presented above.

1.2 Scope of research

Due to bachelor's thesis tight time and monetary budget this study will have certain limitations that are worth noting. The virtual reality continuum as a whole is very broad area to apply in one study. AR and VR are also used in different purposes when it comes to marketing, so it is relevant to study them separately. Therefore, this study will focus purely on AR. As handled mobile devices have boosted development of AR applications creating a versatile and inexpensive platform for such systems (Schmalstieg et al., 2011) this study will have the main focus on mobile augmented reality (MAR). This means that AR systems discussed in this study cover the area of mobile applications (apps) that include AR functions. Furthermore, we focus on the virtual marketing possibilities of these systems.

1.3 Structure of the research

This paper proceeds with a quick look at the previous literature findings in the field. Augmented reality as a concept will be clarified and its current utilization will be opened up focusing in its potential in digital marketing area to get a comprehensive understanding of its possibilities and scope at this point. Chapter 3 deals with is the theoretical background of this study. In this section we aim to reason and discuss the theoretical view of point chosen to this study. To ensure the transferability of the study a detailed description of the data collection process will be provided precisely in the following methodology chapter. This chapter begins with an introduction of the case chosen for the study. The concept of focus group interview and the sampling criteria and relevant discussion areas will be reasoned and clarified in this chapter. Methodology chapter ends to consideration of ethical issues that may arise. From this we will proceed to the findings section in which the results from our qualitative study are revealed. Finally, the thesis ends to discussions and conclusions where the results of the qualitative study are analyzed and compared to previous literature. Implications for practitioners and future research are provided.

2 Previous literature about AR

Over the last couple of years research on AR has increased enormously. The potential of AR is finally starting to reveal. The spread of handheld mobile devices that can be used to apply AR have fostered the usage bringing it close to consumers (Dadwal & Hassan, 2015). Many companies have reacted to this by creating applications based on AR that can be used on mobile phones. Today, the mobile environment is arguably the most common way to access AR environment (Kipper & Rampolla, 2012). Over the very last years the quality and number of AR applications has increased rapidly. Development of new systems easily becomes too technology-driven (Scholz & Smith, 2016). Thus, many developers have failed to meet the needs and desires of their actual customers leading to failed implementations of AR applications (K. Kim, Hwang, & zo, 2016). It seems that only now the research focus is starting to turn on the customer side (Poushneh & Vasquez-Parraga, 2017).

Even though literature on AR marketing has been vast over the very recent years there are still gaps and a lot of controversies that needs to be studied more carefully. The current literature has mostly focused on the technological potential and customer acceptance of this technology. Most of the previous articles are based on the technology acceptance model, TAM (Rese, Baier, Geyer-Schulz, & Schreiber, 2017). In this study we will view the perceived value through hedonic and utilitarian value. This approach is believed to provide more simple and reader-friendly categorization. Moreover previous researches has shown that the original TAM is insufficient to explain customer acceptance of AR technology (Dadwal & Hassan, 2015).

It has been agreed in many previous researches that AR can significantly enhance customer experience and be beneficial in many ways (Bulearca & Tamarjan, 2010; Poushneh & Vasquez-Parraga, 2017). However, the literature is clearly lacking research of the value it can create to customer. What are the critical factors that create value for customer and what is their genuine motivation to use such systems? These are issues that are still very unknown in the current literature. As AR technology is rapidly changing it is challenging to find clear answers to these issues. Experimental research is needed to gain a greater understanding of the factors that drive users to use this technology. Also as it is really challenging to forecast and envision the user experience of AR systems it is important to learn what customers look from the systems and hence gain the latest insights of the implications needed to attract customers (Irshad & Rambli, 2016). For this reason, it was decided to explore this area with a qualitative study to get a holistic

view and discover the most important issues. Also, the previous literature on the field has mostly taken a quantitative approach which we find insufficient in discovering deep insights in consumers' minds because of the importance of emotions and ideas in this study (Walliman, 2010).

2.1 Literature review process

The research on AR has been enormous in the past decade. In November 2019 "Augmented Reality" resulted in over 24,000 documents in Scopus of which over 80% is published between years 2009-2019 (Figure 3). AR in the online marketing context is still at its initial stage. Nevertheless, the research on the field has grown rapidly in the very recent years. Searches within the theme "Augmented reality in online marketing" in Scopus showed a significant interest in the topic in the recent years.

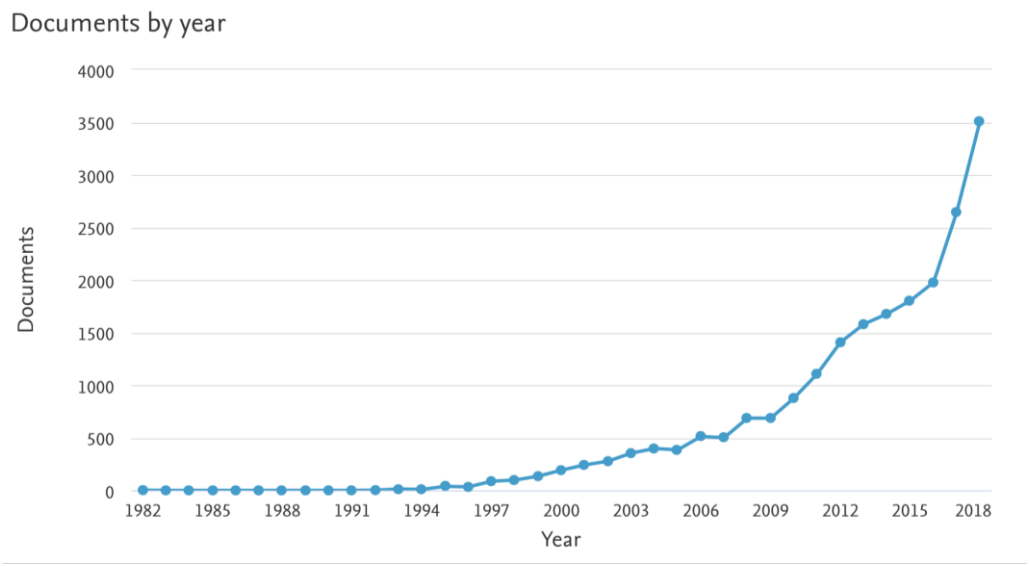

Figure 3. (Source: Scopus)

The secondary data collection in Scopus gave me the idea of the current theories and ideas (Walliman, 2010) that are frequently emerging in the area of AR in online marketing. It also helped in shaping my research. Through a comprehensive literature review I noted that a qualitative method was needed to collect the primary data for the study to be able to answer the research questions.

AR in online marketing context is a new and continually evolving area and therefore needs to be researched more. Through the literature review it was learned that prior studies are not covering the area of customer experience thoroughly. This study suggests that customers' perceived values of the AR experience need to be studied more carefully. Especially hands-on experiences with AR systems are currently lacking in the literature. Also, the research gap on the future needs of an AR application is important to study now as the game is likely to change a lot as AR applications become more general and the novelty effect fades away. Therefore, we need to learn the driving factors for users' continuance intentions. The current literature is mostly approaching the topic with a quantitative method while the nature of this issue yields qualitative study due to scarceness of measurable elements and the presence of emotions and ideas (Walliman, 2010).

2.2 Augmented Reality

In 1968 Ivan Sutherland originally developed AR system using Head Mounted Displays (HMDs) offering only very simple virtual integrations with the real environment (Jung, Kim, & Kim, 2013). The existing technology made it impractical to mass use. In 1992 term augmented reality was first brought up by Tom Caudell who developed a display technology using HMD (Jung et al., 2013). The concept of this technology has multiple different definitions among practitioners and researchers (van Kleef et al., 2010). However, they all agree with the basic discipline.

Azuma (Azuma, 1997) defines AR as interactive technology that unites real and virtual environment in three dimensional space and in real time. AR allows user to enrich the real world by integrating virtual objects in it. Real world is not replaced but rather supplemented in AR (Azuma, 1997). Virtual Reality (VR) which stand for completely artificial ground is often discussed with AR. Both AR and VR are part of a broad virtual-reality continuum "Mixed reality" (MR) (Haller et al., 2006). In the virtual continuum AR hangs between VR and telepresence which is a completely real environment (Azuma, 1997). The concept of virtual continuum is simplified in Figure 2 (Milgram & Kishino, 1994).

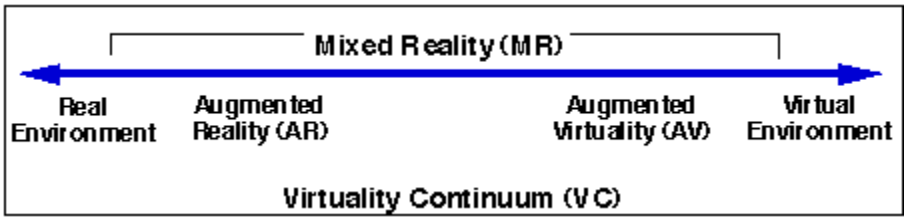

Figure 2. Virtual Reality Continuum (Source: Milgram & Kishino, 1994 p.3)

Even though AR is already two decades old finding the use of it has been very low (Jung et al., 2013). The lack of sufficient devices in which AR can be applied prevented the great spread of this technology. However the quick arousal of mobile devices has offered an attractive base for developers to benefit AR technology (Dadwal & Hassan, 2015). This can be seen as a rapid development of new AR systems. The development has not only been on the mobile devices but also in many other platforms as the technology has improved (Billinghurst et al., 2014; Schmalstieg et al., 2011).

2.3 AR applications

As the research on AR is growing and the potential of AR is finally starting to reveal to companies, different AR applications are starting to emerge on the market (Billinghurst et al., 2014). AR technology can be utilized as a tool in creating new applications (Alkhamisi & Monowar, 2013). Also, huge technology steps in recent years have brought AR closer and created hype among it (K. Kim et al., 2016). Therefore, companies find it compelling opportunity to catch on. Still AR remains widely unknown to the general population (Kipper & Rampolla, 2012). AR has shown its potential on multiple different fields such as medical, entertainment, design, education, commerce and advertising (Alkhamisi & Monowar, 2013; Haller et al., 2006). And the development will continue as companies find new innovative ways to integrate it in their business. AR is believed to go mainstream and become important part of our daily lives (Dacko, 2017; Yuen, Yaoyuneyong, & Johnson, 2011). To reach this point, functional and affordable experiences must be created to variety of user experiences (Kipper & Rampolla, 2012).

2.4 AR in online marketing

The rapid development of Internet technology has changed customer's purchasing behavior (Wang, Chiang, & Wang, 2015). Customers today are more and more often

choosing online channels over the traditional in-store shopping aiming to look for control and convenience (Childers, Carr, Peck, & Carson, 2001). Online shopping however, at its current status is lagging behind in many ways compared to the in-store experiences (Mathwick, Malhotra, & Rigdon, 2001). Traditional online shopping is unable to provide sufficient information about the offering. Therefore, online shopping is considered to increase product risk (J. Kim & Forsythe, 2008). Product information online often fails to meet the expectations of customer leading to high number of product returns. Companies are under the pressure to implement technology-based innovations in retailing to respond the development in retail environment. AR systems are considered to be the next big step in driving the online sales (J. Kim & Forsythe, 2008).

Online shopping platforms can benefit from AR systems in multiple ways. AR can enhance the online shopping experience more like the in-store experience. It has been indicated to increase the satisfaction and effectiveness of online shopping (Wang et al., 2015). The functional and entertaining aspects of shopping are agreed to lead to higher consumer satisfaction and willingness to buy (Poushneh & Vasquez-Parraga, 2017). Customer can use AR to evaluate the product better by virtually trying it in their own environment before purchasing it. The better product knowledge leads to reduced risk of a poor choice and thus reduced return rates (Hilken et al., 2017). Further, AR can create an immersive and interactive shopping process that can be more enjoyable and fun itself compared to traditional shopping (Papagiannidis, Pantano, See-To, Dennis, & Bourlakis, 2017). The entertainment value that is provided may lead to spending more time on the app experimenting the products and trying different product combinations (Dadwal & Hassan, 2015). Majority of grocery shopping purchases are impulse decisions (Zhu, Owen, Li, & Lee, 2004). Therefore improving the convenience and decision-making process can have huge effects on the sales (Zhu et al., 2004). On the whole, AR has the potential to make customers purchase more products as well as engage with the brand (Dadwal & Hassan, 2015; J. Kim & Forsythe, 2008).

Many consumers however, are not confident with the reliability of information that AR systems provide (J. Kim & Forsythe, 2008). Concerns are mostly regarding the actual fit and look of the product (J. Kim & Forsythe, 2008). Therefore it is crucial for the success of such systems that developers keep on improving the accuracy and thus reliability of the AR systems (J. Kim & Forsythe, 2008). In previous research it has been suggested that AR technology aided marketing campaigns should be more result-orientated, easy to use and access to succeed (Dadwal & Hassan, 2015). Thus, naturalness, simplicity and authenticity are the key factors to pay attention when designing these systems. A poorly

designed virtual window can cause user negative feelings and physical problems such as headache and anxiety (Huang & Liao, 2015).

3 Theoretical background

3.1 Perceived customer value

Perceived customer value approach is chosen because it can be applied to understand customers' evaluation of a marketing activity. In this thesis I refer to perceived value as the overall perception of consumers with respect to the sacrifices and benefits that are needed for a service or a product. This approach further increases our knowledge towards the research questions by describing the importance of understanding the customers' perceived value. Perceived customer value has a significant direct relationship with consumer behavior which makes it important concept in understanding customers' behavior (Lin, 2013).

Through decades the idea of value has changed a lot and researchers have different ideas for the definition of the term "value" (Sánchez-Fernández & Iniesta-Bonillo, 2007). The great variety of its definitions indicate the multifaceted nature of value (Babin, Darden, & Griffin, 1994a). Some researchers have a very object-orientated view on value. Uni-dimensional approach often contains elements such as price and quality (Sánchez-Fernández & Iniesta-Bonillo, 2007). This view is considered to be too narrow as it cannot cover all value of an activity (Sánchez-Fernández & Iniesta-Bonillo, 2007). Nowadays more and more often value is viewed in a holistic multi-dimensional way (Babin, Darden, & Griffin, 1994b) covering the overall evaluation of subjective worth considering all relevant factors (Babin et al., 1994a).

Perceived value has been studied thoroughly in the previous literature. It can be characterized as the customers' overall evaluation of the outcome of a marketing event (Babin et al., 1994a; Holbrook, 1994). Perceived value is the primary motivation for a customer to enter and maintain the marketing relationships (Babin et al., 1994b; Chen & Quester, 2006; Lee & Overby, 2004). In order to turn an occasional visitor into a frequent customer the retail experience must provide value (Mathwick et al., 2001). Superior value creation is regarded as the underlying source in achieving competitive advantage (Woodruff, 1997). Therefore, companies should be able to deliver unique and interactive experiences to its customers to motivate them maintain sustainable relationship with the

company. Many companies position themselves as experience providers rather than just product or service providers (Pine & Gilmore, 1998) which emphasizes the urgency of experience today.

Due to the subjective nature of perceived value (Babin et al., 1994a) it is important to gain rich understanding of target customers to learn what makes something valuable for them. Companies should put effort in learning which are the critical aspects affecting their customers' perceived value now and in the future.

In the previous literature on customer behavior it has been suggested that consumers perform purchasing behavior for two reasons: hedonic and utilitarian reasons (Batra & Ahtola, 1991). According to previous studies customers' evaluations of shopping experiences illustrate high diversity depending on customer and context (Babin et al., 1994a). By recognizing and studying this contribution developers will have a better understanding of what makes something valuable. These factors aren't mutually exclusive and can influence simultaneously (Batra & Ahtola, 1991). To give a comprehensive and detailed account of value perceived from a purchasing event additional dimensions might be required (Babin et al., 1994a). However, these two dimensions cover the purchasing phenomena maintaining its basic nature (Babin et al., 1994a; Crowley, Spangenberg, & Hughes, 1992). Also, this simple classification may provide interesting insights in purchasing behavior that would be difficult to explain with functional explanations (Babin et al., 1994b). In this study we propose usefulness (utilitarian value) and enjoyment (hedonic value) as the benefit components of perceived value. The purpose of using these value dimensions in the present research is to be able to classify and interpret the findings of the qualitative study. These value dimensions provide a meaningful "theoretical lens" to view the results through.

Interactive technology such as AR can be used as persuasive technology that convinces customers (Huang & Liao, 2015). AR systems not only deliver functional utilitarian value but also an immersive and interactive experience providing hedonic value (Scholz & Smith, 2016). It has been agreed that the richness of utilitarian and hedonic values in AR systems lead to higher consumer satisfaction and willingness to buy (Poushneh & Vasquez-Parraga, 2017). Therefore AR should be seen as a persuasive tool that can generate unique experimental value not only functional tool that solves customers' problems (Huang & Liao, 2015).

As a theoretical lens we use a framework (Figure 3) presented in Lowry et. al. study originally proposed by Vand Der Heijden (Van Der Heijden, 2004) on behavioral

intention to use a hedonic motivation system. This was considered to be appropriate approach on the issue because it covers both hedonic and utilitarian value dimensions. Also, as the nature of AR can be viewed highly hedonic we believe this framework relevant in the context of our study. Figure 3 captures these dimensions in creating the behavioral intention to use a certain system. This highlights that both of these dimensions are needed to attract customers to keep on using a system. It also shows the perceived ease of use which stands for the core usability of a system.

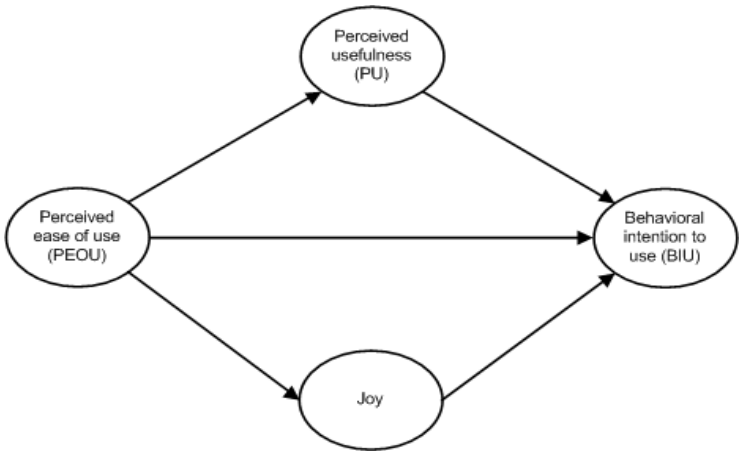

Figure 3 Behavioral intention to use a system (Source: Lowry et al., 2013 p.620)

3.2 Ease of use

Perceived ease of use will not be the focus of the present study. However, its presence cannot be overlooked. It has a crucial role in user's behavioral intention to use a system (Davis, 1989). As figure 3 above shows it has a direct influence on the behavioral intention to use but also both the usefulness (utilitarian value) and joy (hedonic value). Even if the system is otherwise perceived highly useful and entertaining these factors can be overshadowed by the lack of ease-of use (Davis, 1989). Perceived ease of use springs from the effortlessness of an activity. It stands for the degree to which an activity is free of mental, physical and learning effort (Davis, 1989). In this study we define ease of use as the overall user-friendliness of a system.

3.3 Utilitarian value

People often base their intention to use a system on the extent they suppose it will help in accomplishing their task better (Davis, 1989). Thus, utilitarian value reflects the

usefulness of an activity the customer perceives. It refers to the desire of the user to engage in an activity because of the external benefits that can be achieved (H. W. Kim, Chan, & Gupta, 2007). The Cognitive Evaluation Theory defines this extinct motivation as the performance of an activity to achieve a certain goal (Deci, 1971).

Traditionally, marketers and researchers have believed that utilitarian value drives consumer preferences and choices (H. C. Chiu, Hsieh, Li, & Lee, 2005). The traditional buying decision model views shopping as a problem-solving process (Holbrook & Hirschman, 1982). In this model customer is seen as a logical problem solver (Holbrook & Hirschman, 1982). Task-oriented, rational and ergic are characteristics typically associated with utilitarian customer behavior (Batra & Ahtola, 1991). The perceived value of this dimension is mostly dependent on accomplishing the shopping task (Babin et al., 1994b; H. W. Kim et al., 2007). In previous studies the perceived utilitarian value has been found to have a direct relationship to user's continuance intention (K. Kim et al., 2016). In this study we examine the multidimensional nature of utilitarian value as convenience, selection of products, rich product knowledge and financial savings as suggested by Chiu et. al. (C. M. Chiu, Wang, Fang, & Huang, 2014).

3.4 Hedonic value

The experience of performing an activity can be perceived enjoyable and fun. This refers to the hedonic value which springs from the enjoyment perceived from using a product or service (Bellenger, 1976). Any activity involving this product or service is seen to be personally enjoyable and fun itself (Babin et al., 1994a; Davis, Bagozzi, & Warshaw, 1992). It functions right aside the functional value of the activity but is apart from any consequences of the activity (H. W. Kim et al., 2007). Thus, hedonic value alongside with enjoyment reflects to intrinsic motivation, the other subsystem of The Cognitive Evaluation Theory (Deci, 1971).

Hedonic-motivation system can create deep immersion and devotion for the user (Jegers, 2007). Users who own their time for hedonic-motivation systems mostly use them for the experience itself and do not desire any potential rewards that might be achieved (Sweetser & Wyeth, 2005).

Increasingly, the emotional side of shopping has been recognized (Babin et al., 1994a). Shopping itself is seen as an enjoyable and fun situation that fulfills individual's needs. Hedonic value is even more subjective and can be hard to conceptualize (Babin et al., 1994a). Hedonic value springs from the shopping as an experience rather than the

outcome. Therefore hedonic value can measure the potential entertainment value of an activity (Babin et al., 1994b).

3.5 Online shopping behavior

The shopping motivations vary among people (Childers et al., 2001). Many typologies recognize two behavioral motivational factors in understanding the consumer shopping behavior: utilitarian and hedonic motivation (Babin et al., 1994a; Sheth, 1983). In the previous literature utilitarian benefits have been seen as the most important factors in shopping online (Childers et al., 2001; Hirschman & Holbrook, 1982; Sarkar, 2011; Shang, Chen, & Shen, 2005). Buyer often shop online for convenience and several benefits (Sarkar, 2011). According to study conducted by Overby & Lee (Overby & Lee, 2006) people shop online primarily for utilitarian benefits such as convenience, time-saving, better prices and variety of products. However, conclusive evidence of consumers' online shopping behavior and motivation has not been discovered. Some studies highlight the intrinsic motivators in online shopping rather than extinct (Shang et al., 2005). Whereas intrinsic motivation stands for of hedonic values and extinct for utilitarian values. Increasingly, as the number of Internet users is growing (Overby & Lee, 2006) and advances in technology is giving multiple possibilities to online retailers, the hedonic dimension of online shopping is taken into consideration alongside with the utilitarian benefits (Childers et al., 2001; Hoffman & Novak, 1996). Childers et al. suggests that people prefer in-store shopping when they are seeking for hedonic experiences while online stores are preferred when utilitarian benefits are prioritized (Childers et al., 2001). The settlement between these benefits could be collectively combined with AR technology to attract both hedonic and utilitarian shopping behavior.

In the context of this study shopping does not necessarely include purchasing but also involves the acts of evaluating, comparing and browsing and decision making. (Vijayasarathy, 2002).

4 Methodology

4.1 Case IKEA Place

We have decided to focus on a particular case to be able to conceptualize the abstract nature of AR. This allows us to make this study more understandable and user-friendly for our participants and also in understanding the results. IKEA was decided as part of the present study because it is familiar to many and thus easy to approach. IKEA was a compelling case to study in this research as it is a forerunner company on the AR field. It has been among the first companies to utilize AR in favor of virtual marketing in its ongoing marketing strategy. Focusing on a particular case allowed us to put the abstract nature of AR in a more operational form making it more user-friendly for the participants and also in understanding the results of this study.

In 2017 IKEA introduced an AR-based application named IKEA place. At first it was only available for IOS users but since 2019 also Android users have been able to download it from Google Play as well. It is a projection-based app and scans the room to estimate the size of the room. Therefore, user is able to insert virtual 3D pieces of furniture true to size in users own environment via mobile phone camera. The user is allowed to virtually style his or her room with virtual IKEA products and see how they fit together in the selected room.

However, the app is still very experimental. IKEA describes it as a source of inspiration. At this stage the user is not able to purchase anything within the application. However, user can place desired products in to a "wish list" and transfer them to the IKEA website's shopping cart to place the order online. The selection of products is also limited and not all IKEA products are present in the application.

Regarding the ratings and reviews on the app the feedback has been very positive, and users seem to be excited. In November 2019 IKEA place had received 4,7 out of 5 based on over 5400 ratings on App Store (App Store 11/2019) and 3,2 from over 1000 ratings on Google Play (Google Play 11/2019).

4.2 Empirical study

The present study was conducted in a laboratory setting in Aalto University, Finland. Focus group interview with an application usage was used to collect the primary data for

the study. Qualitative method was needed to capture valuable information that quantitative method might not have revealed. The qualitative method allowed to discover interesting insights from participants and observe the experience. Because of the unexplored nature of the issue and presence of emotions and ideas qualitative study was a clear choice (Walliman, 2010). Thus, we were able to address the main factors and critical aspects of user experiences with AR. It has been noted in earlier research that group discussion are more efficient in producing critical comments than interviews (Kitzinger, 1995). Therefore, it can be valuable method especially in improving new services like AR applications.

Laboratory setting was needed to gain control over the situation (Walliman, 2010). Location of the setting was important to create the convenience for intimate and fruitful discussions (Krueger, Donner, Maack, & Mary, 2001). Also, it was important to have enough space for using the AR. In addition, for convenience reasons the laboratory setting was conducted in Aalto University´s private study room where participants could easily access. It is suggested to interview people in their language (Krueger et al., 2001). Thus, it was decided to hold the discussion session in Finnish and later on translate it in English.

The discussion session was recorded on a video and voice recorder to be able to thoroughly analyze it later on (Krueger et al., 2001). The video recording also made it possible to identify the comments among participants which was important in analyzing the results. With video also the very important body language and facial expressions were recorded.

No preparations were required from the participants. Downloading the IKEA Place was recommended to smooth the interview situation. As everyone had arrived participants were asked to introduce themselves to other participants to create friendly atmosphere (Krueger et al., 2001). The session began with a quick oral presentation about AR and its marketing possibilities. After a brief orientation, participants were instructed to discover and experience the IKEA Place AR application with their mobile phones. We were prepared with extra mobile devices as we noted that the app was not available for some older updates of mobile phones. Participants were observed during the simulation activity and encouraged to express their feelings already at this point. No time-limits were given for the simulation to deepen the experience. However, ten minutes seemed to be enough for the group to get a comprehensive image of the app and its functions.

After the simulation interviewees were encouraged to discuss about their experience. A semi-structured approach was used due to its flexibility and unexplored nature of the study. This approach allowed us to cover the important topics but keep the discussion conversational. It was decided before the interviews which themes must be addressed for the study and opening-questions were designed based on these themes. The aim of the focus group was to discover the perceived value through the following questions:

1) What are the assumptions towards AR technology

2) how consumers experience AR and more specifically

2a) to what extent does it deliver useful information to support decision-making and

2b) how entertaining is the experience and finally

3) whether they would be likely to use such an application in the future

Thus, these themes created a base for the discussion. However, the discussion was open to flow to different topics that evoked interesting insights regarding the study. It was highlighted that at any time one could express his/her thoughts regardless of the theme under the discussion.

The mediator was leading the discussion. In qualitative research the mediator has an important role in affecting participants' behavior (Breen, 2006). Therefore, the reflexivity of the interviewer was considered strongly (Breen, 2006). Mediator tried to be as neutral as possible encouraging each subjective insight. Mediator's job was to create an open and friendly atmosphere. In order to create discussion participants were addressed with open questions (Krueger et al., 2001). The goal was to let the participants to be on voice as much as possible. Therefore mediator's speaking was restricted to leading the discussion to desired topics by asking open questions and asking follow-up questions about interesting comments (Breen, 2006). Mediator also ensured that no one was dominating the discussion (Krueger et al., 2001). To guarantee the reliability of the results a brief summary of the key points was presented in the end to confirm the correctness of the findings (Krueger et al., 2001).

The focus group session lasted for 90 minutes. Because of the limited scope of the study and time restrictions of bachelor's thesis we only had one focus group. Also, the

discussion was so fruitful and meaningful that it was believed to satisfy the needs of the present study. As the interview setting was almost identical to the pilot study we were able to use the pilot study data as well (Breen, 2006). Therefore, in the context of this study we believe that saturation point was reached.

4.3 Pilot Study

Before the final interview we first interviewed a pilot focus group to gain experience. A smaller test group consisted of similar sample characteristics as the original one. The test group participants were not invited in the final interviews to avoid possible learning curve (Malhotra, Birks, Palmer, & Koenig-Lewis, 2003). By the pilot experiment we were able to test the interview settings that was planned which in turn contributed positively in the trustworthiness of the study (Breen, 2006). It enabled us to detect possible blind spots and misleading wordings in the leading questions and make it more user-friendly. Doing so the interview that preceded the pilot-study was smoother and more prepared. The pilot-study also helped to detect that the app wasn't available on all iOS updates and hence, we were able to prepare with extra mobile devices in the actual interview. Also, it enabled us to find some interesting insights that we were able to address with the focus group as well.

4.4 Sample

To be able to address the research questions of this study information was needed from large amount of individual people. Since involving the whole population requires much time and effort sampling method was used (Walliman, 2010). Some requirements were needed for the participants to get the most valuable results for this specific study and thus purposive sampling was used (Devers & Frankel, 2000). The appropriate sample characteristics chosen for the research were young university students who belong to Generation Y (around 18-34 years). This was reasoned because majority of Generation Y is considered to consist of digital natives (Cohen, Prayag, & Moital, 2014). Moreover, majority of younger populations can be characterized as early-adopters and thus be more likely to adopt AR (Olsson et al., 2013). This population was believed to provide advanced and sophisticated insights about this technology that would reflect the future and thus provide richest insights for our research questions. Representative group of six people with the sample characteristics was used to represent the target population.

Participants were primarily undergraduate business students from Aalto University. Group size of six was neither too large to create frustration and boredom nor too small that one member would dominate the discussion (Krueger et al., 2001). The gender distribution of the participants was two males and four females. All of the participants were 20-25 years old which is in the age group most AR applications are targeted for. They were all required to be somewhat technologically-orientated and interested in new technological advances and thus considered to be early adopters of new AR services. Therefore, we ensured that they would easily understand the basic principles of the application and express relevant and advanced thoughts of the experience.

As AR is still very new advanced technology for many it can be very distinct concept for people that are not confident with technology. Therefore, chosen group consisted of people that were considered to be early adopters of technology. Olson suggests that before moving to general population it is relevant to study early adopters in order to identify the most fundamental issues and find potential solutions envisioning the future (Olsson, 2012). Doing so we were able to capture the best potential of the technology that would reflect to the future (Krueger et al., 2001). AR is yet unfamiliar to many which made it easier to motivate technology-orientated people to participate the study. As the sample consisted of young early adopters of technology it was ensured that the relevance of the discussion was maintained. It was also believed that these characteristics of the sample would result in critical discussion and thus valuable insights in developing these applications. IKEA's customers are often young students, so it was relevant to gather the focus group of one of the most important target group of the related business.

Snowball sampling was used to gather the focus group. First finding suitable people from friends and family and let these other participants recruit other participants within the sample criteria to take part (Krueger et al., 2001). Finding suitable and motivated participants was surprisingly easy. AR and mention of IKEA clearly seemed to interest people. People often expect to learn something and find sharing experiences meaningful and therapeutic which can be rewarding and motivating itself (Breen, 2006). Additionally, participants were also offered a homemade cookie as an incentive and a gift for participating. To ensure the attendance, participants were reminded with a text message the day before the study (Krueger et al., 2001). All in all, ten people were invited in the focus group session because of possible no-show and last-minute cancellations (Rabiee, 2004). Six of ten people finally participated which turned out to be optimal amount to create a productive and intimate discussion atmosphere.

4.5 Coding and analysis

The qualitative data that was collected in the focus group was transcribed right after the interviews. Transcription was needed to turn the conversational behavior of the interview into a permanently available paper for scientific analysis (Flick, 2004). Transcribing also helped with the familiarization of the data as a whole to get a comprehensive understanding of the major themes (Rabiee, 2004). After the focus group interview followed coding, clustering and summarizing the data which was the first step in simplifying and categorizing the findings (Walliman, 2010). Coding of qualitative data was done in Microsoft Excel and Microsoft Word. Each line of the transcription was numbered to be able to identify them. This software allowed us to classify our results within different themes presented in Figure 3 and select the most relevant ones. It also allowed us to use colors to visually categorize the findings. Data reduction was achieved by comparing and combining similar findings (Rabiee, 2004). However, the original transcription was saved and stored carefully. Finally, all of the relevant findings were combined as one by following reasonable structure within the themes. Direct quotes from the focus group were attached with corresponding findings.

The reliability of the findings can be indicated by the frequency of participants agreeing and disagreeing (Breen, 2006). Issues that reached a general agreement were highlighted while issues that generated diverse comments were analyzed with caution (Breen, 2006). Additionally, issues that generated a lot of opinion shifting were considered carefully (Breen, 2006).

The findings were compared with the pilot study findings and the previous literature. Also, member checking was used to ensure that the present study is presenting the participants' reality in a way that is credible to them. This in turn, positively affects the credibility and trustworthiness of the study (Daymon & Holloway, 2010).

4.6 Ethics

In designing the research methodology possible ethical issues that may emerge were considered strongly (Orb, Eisenhauer, & Wynaden, 2001). Collecting data from people is a sensible area to work on and has to be taken seriously. Trust was created with the participants by guaranteeing their personal privacy and anonymity in the study. Therefore, all the participants were given a consent form to sign (Orb et al., 2001). A consent form provided information about the study and its purposes and the use of

information that was collected. The same consent form was also offered to the pilot study group. It was highlighted that involvement for the study was voluntary and participants were given the possibility to withdraw from the study at any time. The storage of the recorded audio and video data was only used for study purposes and stored only while it was necessary. Participants were informed about their time commitment as the interview can take a significant time of their day (Rabiee, 2004).

5 Findings

Findings of this study will be presented through the theoretical lens presented above in Figure 3. Categorizing the affecting factors of behavioral intention to use a system into perceived hedonic and utilitarian value further helps us to classify the results of our empirical study. We are not aiming to search for the truth of the issue but rather bring a meaning to the situation as suggested by Rabiee (Rabiee, 2004). The focus group interview provided interesting insights of participants' first experiences of AR application that revealed how they experienced AR and what kind of value they perceived. Also, some other interesting insights that were brought out during the discussion will be introduced. In the following sections we will open up the results classified to the value dimensions: utilitarian value and hedonic value. Even though, not in the main focus of this study we will also include some relevant findings regarding the ease of use.

The concept of AR was familiar to all of the participants. The IKEA Place app however was new for the most of them. Only two of the participants had heard of it before. But this was the first experience to all of them to use and see the application. The participants' expectations towards the app were neutral while some excitement emerged. During the simulation the observation revealed that the technological problems in the application created a lot of frustration among them. It took a lot of time and effort until they were able to start using the actual function of the app: style the room. Technological problems created distrust and negative hilarity towards the app in the simulation phase. The discussion that followed the simulation began with a quick navigation of overall feelings. The first impression with the AR application was thus a disappointment for most of them. It was easy to see the correlation of persons attitude and how the functions of the app worked with them.

5.1 Findings reflecting to utilitarian value

Participants did not find use for the application at its current state. Many of the statements considered the usefulness of the app. The lack of reliability was the most disturbing factor. Scanning the room and thus being able to place the furniture in correct size did not work as was expected and the furniture appeared unnaturally huge on the screen. For this reason, it was stated that the app wasn't accurate enough and the sizing could not be trusted. Participants' stated that if it would functionally work and be truly accurate in the scaling it would have strong potential to be actually useful. Some even indicated that they would not have to visit the department store if they could virtually see the products in their environment and place the order online. Participants also noted that the app has the potential to decrease the need to take measurements of the room before going to furniture shopping. The following quote illustrates this. All of the following quotes are presented in pseudonyms.

"If you suppose it would scan it 100% correctly this would be a hit" - P3(pseudonym)

The colors and materials of some furniture did not convince the group. The presentation of them was too "computer-like" and thus unnatural. It was thought to be useful in combining and comparing between the virtual products but not with the elements of real environment. It was suggested by one member that the lighting of the placed products should be adoptable to the real lighting to make it more realistic.

"The furniture was clearly presented in the light, so I did not really get a realistic view under the current circumstances" - P4

"The material of some furniture looked too unnatural and computer-generated to be compared with the real environment" - P6

Participants anticipated that the app would be useful in an empty room with no furniture or other people. The existing furniture was considered problematic. They thought that styling the room was frustrating when you had to place some of the virtual furniture on top of existing ones.

"If you would move to an empty studio flat this could be useful" - P2

"You should have your old sofa out before you could try a possible new one with the app" - P2

"Why would I ever use it again after I once have fully decorated my flat... It fails creating frequent use" - P2

One of the main factors disturbing the usefulness of the application was the overall design of the application. Participants found it really confusing and unpractical. All the participants agreed that searching items was really hard. They tried searching items with general words such as "chair" which resulted in no items. Afterwards it was noted that user should be able to search items with IKEA collection names. Participants agreed that it was a very inconvenient feature. One of the participants compared app to IKEA's online web page:

"The IKEA webpage is so simple and easy to use I don't know what's gone wrong with this" - P1

The application was also regarded as too irrational from their shopping behavior to be used frequently. It was said to be one more addition to IKEA's application collection. Participants agreed that nobody wants to store too many applications that are used so seldom.

"Rarely anyone buys furniture so often he would want to keep such app on his phone...one app that holds all the features is needed" - P3

"It should be together with IKEA's original app to be used because when I leave I will delete it because I don't need it" - P5

However, it was suggested by the participants that a linkage between IKEA's website and the app could make them use it in some cases. A straight link from the website to the app opening a certain product virtually to user's environment was agreed to be a good idea. One of the participants thought that the AR system would serve as a nice little addition in an existing app:

"If there was an additional "try it in your room button" I would use it but even then, just for the sake of fun" - P5

Participants agreed that currently the app would not be able to replace the shopping experience in the department store. It was stated that the trip to the department store, especially to IKEA is often a fun experience. Also, they considered furniture shopping as risky and big purchase meaning they really want to be sure about the product. They felt that seeing and touching as well as trying the product was necessary in the decision-making process.

"Big furniture purchases are not easily virtualized... I believe people want to see the product " - P3

"The more you spend money on a product the more sure you really want to be... You would never base your decision based on the app" -P1

"I would never buy a sofa before actually feeling it" - P3

However, smaller impulse purchases with lower price often occurring in the department store were considered to be potential products in the app. However, the participants noted that this category was currently lacking in the application. They agreed that the app did not increase their willingness to buy. The limited product selection was also seen to affect the usefulness. Participants stated that they would want to see the whole selection before they would pick their favorite and thus they would want to visit the web page or store.

The participants were missing a feature to save the styled rooms for later comparing the styled rooms. One even expressed anger of losing a styled room without any warning when closing the window. The saving feature was considered to be very useful and provide extra value through comparing. It was also pointed out that sharing the saved decorated rooms through social platforms to one's partner for example would be useful.

"It would be nice to be able to save differently styled rooms and later on compare them in your gallery" - P1

Participants also noted a contradiction. Mobile device was viewed handy in AR systems but impractical for shopping while online shopping via computer was viewed handy but not so convenient for AR systems. At this point, the link between the website and the app was brought up again.

"When aim to shop, I go to web to see the items rather than open a sad app... It's just so much more simple" - P1

Even though the group was very critical towards the current practicality of the app they were positive about the future of the app and AR overall. The app was said to have a lot of potential if it overcomes the technological problems and improves the design and functions simpler.

"You can see it does not work so well but then if it worked perfectly it would be "wow"" - P3

They agreed that AR technology is still lagging in place even though it has been there for quite some time already. Thus, they would expect it to make actual use already. Nevertheless, most of them had high expectations for AR to become general technology within 5 years. It was believed that AR will be widely used in many areas to provide practical help in the near future.

"These AR technologies have been there for quite some time and they still have not improved" - P3

"AR was "in" a couple of years ago it is not a "wow" anymore you just wonder how isn't it still working"-P2

5.2 Findings reflecting to hedonic value

The app was viewed as an entertaining game rather than a useful tool. However, it was not thought to be entertaining to that point where it would be used again. Group agreed that such an app that is expected to provide some practical value is not used when aiming to entertaining experiences. Many of the statements confirm that it would provide entertainment for only a couple of minutes.

"Yes, it can be fun to play with for 5 minutes but you don't really get any use out of it" - P1

"You can style your room for a couple of times yey provides 5 minutes of fun...quite a novelty app" - P2

"I took it like as a game" - P4

The design of the app was though to look nice and thus enjoyable. However, the design was thought to disturb the practicality of the app. They agreed that it was too complex.

"When you are looking for actual practical help, simplicity is more important... games are a case separate " - P3

Frustration of the unpracticality of the app seemed to overshadow the possible entertaining experience. Browsing the products did not really seem to create joy among the participants but rather negativity of the confusing and complex design. It was stated that if the functional aspect satisfied the user the overall experience would be more enjoyable. Even though they were not concerned about the entertainment value in the app it was stated that some hedonic elements are needed in AR applications to make

them enjoyable. One pointed out that user somewhat expects that because of the imaginary nature of AR.

5.3 Findings reflecting to ease of use

The level of perceived ease of use was found moderate among the group. The lack of sufficient instructions was confusing the participants. They stated that the app made them feel silly shaking their phones and yet not finish scanning the room correctly to be able to make the AR work.

"There is a picture of a moving phone, so you end up shaking your phone with no direction... of course it will not get it right" - P2

It was suggested by one of them that it should offer more information regarding the unfinished parts of scanning. They felt unsecure weather they had done it correctly in the first place as the picture of shaking hand maintained stably on the screen despite all the effort. Not knowing which parts still need to be scanned to make the AR work frustrated them.

6 Discussion and conclusions

In this chapter we conclude the study by discussing the findings and providing implications for both practitioners and future research. The findings of the experimental study are combined and critically compared to appropriate existing empirical and theoretical research to draw the final conclusions of this study. Present study examined the effectiveness of AR in favor in creating value for users in online shopping context. We studied the subject through customers' perceived value with two value dimensions: hedonic and utilitarian. As a theoretical lens we used a framework of behavioral intention to use a hedonic motivation system presented in Figure 3. This was considered to be appropriate approach to the issue because it covers both hedonic and utilitarian value dimensions. We aimed to understand how consumers perceive the value of current AR applications that have functional potential. Additionally, we tried to learn if these apps can drive the intentions of continued use. Further, we tried to investigate how they should possibly be developed to reach and maintain users. This study aimed to be very future-orientated because of the rapidly evolving nature of the issue. Doing so this paper

will be beneficial for developers and practitioners in planning and designing AR applications.

The focus group interview produced critical insights of marketing orientated AR application. The insights are highly focused on the practical uselessness of the app. The current app was not able to deliver users enough utilitarian value to be perceived useful. Neither the hedonic value was not perceived to the extent it would drive usage intentions. Especially, the lack of utilitarian value was disturbing the usage intention. The app was not perceived to be helpful in accomplishing the shopping task. The main factors limiting the perceived utilitarian value were mostly resulted from the technological performance. We believe current technology is not yet able to deliver enough accurate and authentic content in AR applications to convince customers of its reliability. Thus, the current technology restricts the use of AR in shopping context and fails to provide useful information to support the decision-making process.

Other factor that was disturbing the perceived utilitarian value was the complex design of the application. Participants addressed that due to the complexity of the product categories and lack of sufficient search function it was hard to find any products which made it really unpractical for shopping. The complexity limited the effectiveness of the task. Moreover, participants were frustrated by the unpractical design and were looking for simplicity. Therefore, we believe that if aiming to enhance the utilitarian value of an AR shopping orientated application simple design and simple functions should be considered. Bonnin (Bonnin, 2020) findings are consistent to this as his empirical study suggests that AR applications should be more simple and more realistic when aiming to long term benefits.

Thirdly, the irrational nature of the application was believed to be a problem in the usage. As the application is separate from any other IKEA platforms too much effort was needed to use it. Participants suggested that the linkage between other platforms is crucial in decreasing the irrationality. We believe the findings regarding the irrationality of the application and often impractical experience of mobile shopping result in the app being unattractive alternative to replace the current shopping behavior.

Through the present study as well as according to previous literature we determine that perceived utilitarian value is the key factor of the perceived value of AR online shopping applications. User will expect to get real functional value when aiming to take the step towards this new advanced shopping experience. Thus, when user faces this kind of application it is important that the expectations are met and user feels satisfied. In order

to return user needs to be provided with something more than traditional shopping experiences. It can be provided with multiple different ways. However, to be used again it needs to be perceived truly beneficial. If the system isn't perceived truly useful it is easily replaced with existing shopping habits. Robey's (Robey, 1979 p.537) citation also illustrates the importance of task-orientation in systems: "A system that does not help people perform their jobs is not likely to be received favorably in spite of careful implementation efforts".

The entertainment value did not convince the participants. The experience was considered to be somewhat entertaining and was referred to playing a game. The entertainment level did not achieve the point in which the application would be used for entertainment purposes. Also, participants stated that entertainment was not what they were looking from such an application. They also stated that games and entertaining experiences are a separate case and used for different meanings. Thus, when user is aiming to entertainment and enjoyment, applications from different category such as games come into consideration. This indicates that they were expecting AR be able to provide useful information rather than entertainment.

Although the results highlight the practicality of AR we believe that both utilitarian and also hedonic aspects are needed to attract customers to use it again. Van der Heijden (Van Der Heijden, 2004) highlights the importance of hedonic value in utilitarian systems as an important factor in usage intention. He also suggests that hedonic features would save an otherwise rejected utilitarian system (Van Der Heijden, 2004). Our results however, differ from this view. Our results view the hedonic aspect rather to have a supportive nature. It is natural that even though practicality in such applications is appreciated and needed people would still prefer enjoyable services. However, the fun element in these apps should not disturb its functionality. Hedonic value thus, seems to have the least impact on perceived value. These findings are consistent with Kim et. al. (H. W. Kim et al., 2007; K. Kim et al., 2016) previous studies on perceived value of AR systems. Also, previous studies on customer value in online shopping support these findings (Overby & Lee, 2006). However, Van Der Heijden (Van Der Heijden, 2004) suggests in his experiential study that hedonic value is the dominant factor in intention to use a hedonic information system. However, the case of our study isn't strictly hedonic or utilitarian system as it clearly has both aspects.

There has been discussion in the previous literature about the "novelty effect" AR has been holding (Olsson et al., 2013). The novelty effect is strongly associated with our study as it possibly affecting the perceived hedonic value (Bonnin, 2020; O'Brien, 2010).

Currently as AR is under a strong hype it could be the key driver of usage intention. Bonnin (Bonnin, 2020) suggests that retailers just showing they have AR can benefit in terms of attractiveness to their customers. He believes that this will only hold while the technology is not widely adopted. Our participants however, did not find AR system arise "wow-experiences". Now it seems that this young generation is saturated with AR and is waiting to see actual use of it. We can conclude to this for many reasons that arose in the present study. The mindset in the beginning was excited when they were told about the AR app that can be used as a help for shopping. However, the excitement was overshadowed by the big disappointment when AR technology was still lagging. Participants agreed that as AR has been there for so long already they would expect it to work much better. We believe that for older generations not so familiar with this technology this experience would be really entertaining and thus valuable. However, as it is out of the scope of the present study we suggest further research on other generations.

6.1 Implications to practitioners

To be able to deliver any value developers should firstly focus on the core of the system making it user-friendly. Thus, instructions to use the functions should be highlighted. Rich guidance should be provided as there are still many people unfamiliar with using AR.

AR has a great potential to become a useful technology in online shopping context. We suggest that at this point online retailers should focus on the functionality of their AR systems before attempting to reach other aspects on the development. We believe that at this point companies should not try to reach the short time benefits of AR. Saying this we mean that AR should not be implemented to marketing strategy just for the sake of having AR. It might give a chance to differ from competitors and attract new customers for some time. We believe this approach is risky and does not yield long term benefits. We rather suggest companies and developers to consider AR as a practical tool to truly provide customers with rich utilitarian value. The effort put into the careful implementation will likely result in more satisfied customers who are more confident with their purchases (Bonnin, 2020).

To reach the point of creating sustainable utilitarian value AR technology must overcome its current technological disruptions and become smoother. This study proposed that developers should highlight the usefulness when developing these systems. This means

that they need to be simple, realistic, accurate, and efficient. It could also mean making systems less entertaining. Rich utilitarian value must be provided to make a one-time user into re-visitor and to make the system a natural part of decision-making. This is believed to yield long-term benefits for the company. Kim et. al (K. Kim et al., 2016) study on continuance intention of AR applications also suggests that information quality is the key factor in continuance intention of these apps. Whereas information quality refers to utilitarian value and is consistent with our findings. Focusing on the hedonic value is not sufficient because it is highly associated with the novelty of AR. Especially younger generations who are mostly familiar with this technology will not find it entertaining enough to be used again if real usefulness is missing. Furthermore, AR is believed to reach the general population potentially making it sooner or later general technology for the whole population.

Even though we underlined the utilitarian value for successful AR online shopping experience creation we believe that hedonic elements are also needed to truly succeed. Those can enhance the overall experience to be more enjoyable. Increasing the enjoyment level also might make user want to spend more time with the app. Hedonic elements may become important in the future to make a useful app superior to competitors by being even more entertaining and fun. Therefore, we suggest developers to consider the entertainment level as well.

It is also important that customers don't view the AR expansion irrational. AR service should provide a seamless omnichannel experience. It should be integrated into the current marketing strategy in a way customer can access with minimum effort. Otherwise the AR expansion will be forgotten or viewed too complex in the shopping process.

The results of this study focused on a marketing-oriented AR application. However, we believe the results provide interesting and valuable insights to anyone interested in user perceptions of AR applications that have a functional nature. We encourage companies to consider integrating AR systems in their on-going business strategy. AR gives endless opportunities to be applied in. Innovative ways can be used. However, when planning to expand to the AR field companies need to know how to best meet their customers with it.

6.2 Limitations and implications for future research

As in any research this research has some limitations that are worth noting when applying the results. Due to time and money restrictions of a bachelor's thesis some

limitations had to be done. It should be noted that the results of this study are not supposed to be generalized to the whole population. Our sample was limited to digitally orientated young university students. Thus, these attitudes can be significantly different from older generations that are not so familiar with AR. Also, since there was only one focus group strong conlusions cannot be drawn and results should be interpreted with a caution. Moreover, the cultural differences might affect in comparing the results with other evidence as our sample consisted of Finnish people only. The selection of one particular AR application in the experiment can also be seen as a limitation of the present study.

The topic arouses multiple contradictions in the existing literature because of little research and knowledge. We encourage researchers to study AR in online marketing more. Especially the customer experience of these systems cannot be underlined enough. We suggest that more qualitative study must be done to understand and keep up with the changing behavior of consumers.

It would have been interesting to consist the focus group of people that have a genuine motive to use the app and conduct the focus group in natural setting rather than laboratory setting. Therefore, we suggest future researchers to research the motives of the actual users to start using the application. In the present study participants were suggested to try it and the genuine motivation to use the app is unknown and based on guesses. We also believe that qualitative interview on a company using AR in their strategy would be a valuable addition to the existing literature. Future research could also cover the brand effect of these applications. It would be valuable to discover how such technology affects the brand image of consumers. Also, researches within the topic should be conducted in other areas of online shopping. There are currently AR applications for fashion apparel and accessories for instance which are worth researching in order to learn the current issues in each field and to understand the areas where AR can best be applied in the future.

As advances in this technology will continue to emerge giving service marketing strategies new tools, the opportunities for future research will keep on coming. Also the need for constant research is strong because the use of real-time data is crucial for companies both when planning and maintaining these systems as technology constantly changes and is replaced by advanced ones (Dadwal & Hassan, 2015). This research offers a first-step understanding on the customer value of these services with an understandable approach to improve the current applications and especially to prepare for the future demands.

6.3 Conclusion

The purpose of this study has been to examine the perceived value of current shopping-orientated AR applications. The future directions to guarantee the sustainable usage intention of these applications was also investigated. The primary data for the study were collected from the focus group interviews. The research questions identified are addressed specifically in this section. The first research question was aiming to find answers to the user perceptions of current AR applications:

Q1. How do customers perceive the value of AR applications businesses are offering?

Results of the present study discovered that currently AR applications are mostly perceived as entertainment. The hedonic value aspect is highlighted. However, we found that the perceived hedonic value alone cannot satisfy the user of AR application that is expected to have functional nature. Also, utilitarian value is needed to make user to re-visit and thus build sustainable use. The perceived utilitarian value of the app is rather low to nonexistent. Users don't really find AR provide functional value. Usefulness is overshadowed by the lack of reliability and accuracy. The content of AR is currently perceived too unnatural and irrational from the real environment. Therefore, we conclude that AR in online shopping is not perceived neither useful nor entertaining enough to be used. However, the potential to create rich utilitarian value is prominent if several technological and practical issues are covered. We believe that to have a huge effect on the user perceptions. This leads us to the second research question of the study which aimed to seek the future directions of AR applications to build continuous usage intentions:

Q2. How should businesses prepare for the future of AR?

The potential of AR is evident which has been stated in previous literature (e.g. Billinghurst et al., 2014; Hilken et al., 2017; Olsson, 2012) and confirmed with the results of the present study. Thus, companies should take AR under strong consideration. AR has been there for quite some time already and customers are clearly expecting it to provide more than entertainment. This study suggests that creating rich hedonic value will not be sufficient. In order to build an AR application that is frequently used, utilitarian value needs to be strongly present. An application that is used mostly for utilitarian reasons must be able to respond the needs of the user and deliver useful information to satisfy the customer. Therefore, we encourage developers to highlight the practicality of the apps by providing simple design that support the task itself. AR should

not be considered only as an exciting tool to attract new customers because we believe that this kind of implementation will not generate stable usage intention. AR is already general to that extent it should not be added to business strategy just for the sake of exciting new technology. We believe it has overcome that point and this kind of strategy will not attract customers at least long-term in mind. There is a rich functional potential in AR that should be taken seriously. Through the results we believe that developing these applications to satisfy the functional need of users' it will also have a positive effect on perceived hedonic value making the experience more enjoyable. Thus, we believe that in the next phase enhancing the entertaining level of a functional AR app will provide a great opportunity to differ from competitors.

It is evident that some technological problems still exist in AR applications. However, from a technical perspective these problems can be solved. As hardware will keep developing it is supposed to provide developers with better tools in creating more realistic and accurate AR applications. Which in turn can have a huge positive impact on user perceptions regarding especially the utilitarian value. User acceptance and the relevance of the technology has an important role in phrasing the success of these applications in the future.

The empirical findings of this research are believed to help both developers and companies in enhancing their AR marketing strategy to respond the customers' task orientation and intentions better. Therefore, we believe the results to be extremely valuable in improving and developing AR systems that will meet customers' needs.

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